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ABSTRACT

This document, which reflects Mississippi's statutory requirement that instructional programs be based on core curricula and performance-based assessment, contains outlines of the instructional units required in local instructional management plans and daily lesson plans for two secondary-level courses in carpentry: carpentry I and II. Presented first are a program description and course outline. Section I contains curriculum frameworks for both courses, and section II contains outlines of the instructional units required in each course. The first course consists of the following units: orientation, safety, carpentry math and measurement, tools and equipment, reading blueprints and working drawings, materials used in carpentry, and foundations. The second course contains these units: orientation, safety, floor framing, wall framing, roof framing and covering, exterior finishing, and interior finishing and cabinets. Each unit includes suggested time on tasks, competencies and objectives, teaching strategies, assessment strategies, and resources. Recommended tools and equipment are listed in section III. Appended are lists of related academic topics and workplace skills for the 21st century and student competency profiles for both courses. (MN)

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Mississippi Curriculum Framework for Residential Carpentry

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1996

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July 30, 1996

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CURRICULUM FRAMEWORK

FOR

RESIDENTIAL CARPENTRY

(PROGRAM CIP: 46.0201 - Carpenter)

July 30, 1996

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FOREWORD

The courses in this document reflect the following statutory requirements as found in Section 37-3-49, Mississippi Code of 1972, as amended:

> The State Department of Education shall provide an instructional program and establish guidelines and procedures for managing such programs in the public schools as part of the State Program of Educational Accountability and Assessment of Performance. . .
>
> The department shall provide that such program or guidelines . . . are enforced through the performance-based accreditation system.
>
> The local school board must adopt the objectives that will form the core curriculum that will be systematically delivered throughout the district.
>
> Standards for student performance must be established for each core objective in the local program and those standards establish the district's definition of mastery for each objective.
>
> There shall be an annual review of student performance in the instructional program against locally established standards.

Each secondary vocational-technical course consists of a series of instructional units which focus on a common theme. All units have been written using a common format which includes the following components:

- Unit Number and Title
- Suggested Time on Task - The number of days of instruction that should be required to teach the competencies and objectives of the unit. For secondary occupational programs, a "day" represents a two-period block of instruction.
- Competencies and Suggested Objectives
  - A **Competency** represents a general concept of performance that students are expected to master as a requirement for satisfactorily completing a unit. Students will be expected to master all competencies in the curriculum framework in order to satisfactorily complete the course.
  - The **Suggested Objectives** represent the enabling and supporting knowledge and performances that will indicate mastery of the competency.
- Suggested Teaching Strategies - This section of each unit indicates strategies that can be used to enable students to master each suggested objective. Teachers should feel free to modify or enhance these suggestions based on needs of their students and resources available in order to provide optimum learning experiences for their students.

- Suggested Assessment Strategies - This section indicates strategies that can be used to measure student mastery. Examples of suggested strategies could include classroom discussions, laboratory exercises, and student assignments. Again, teachers should feel free to modify or enhance these suggested assessment strategies based on local needs and resources.
- Suggested Resources - This section indicates some of the primary instructional resources that may be used to teach the competencies and suggested objectives. Again, these resources are suggested and the list may be modified or enhanced based on needs and abilities of students and on available resources.

The following guidelines were used in developing the curriculum framework in this document and should be considered in developing local instructional management plans and daily lesson plans:

- The content of the courses in this document reflects approximately 75 percent of the time allocated to each course. For a one-year course, this means that the content of the existing units of instruction should represent approximately 135 days of instruction. The remaining 25 percent of each course should be developed at the local district level and may reflect:
  - Additional units of instruction within the course related to topics not found in the state framework.
  - Activities which develop a higher level of mastery on the existing competencies and suggested objectives.
  - Activities and instruction related to new technologies and concepts that were not prevalent at the time the current framework was developed/revised.
  - Activities which implement components of the Mississippi Tech Prep Initiative, including integration of academic and vocational-technical skills and coursework, school-to-career transition activities, and articulation of secondary and postsecondary vocational-technical programs.
  - Individualized learning activities, including work site learning activities, to better prepare individuals in the courses for their chosen occupational area.
- Sequencing of the units of instruction within a course is left to the discretion of the local district. Naturally, foundation units related to topics such as safety, tool and equipment usage, and other fundamental skills should be taught first. Other units related to specific skill areas in the course, however, may be sequenced to take advantage of seasonal and climatic conditions, resources located outside of the school, and other factors.

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July 30, 1996

PROGRAM DESCRIPTION

RESIDENTIAL CARPENTRY

(PROGRAM CIP: 46.0201 - Carpenter)

Residential Carpentry is an instructional program that prepares individuals to safely lay out, fabricate, erect, install, and repair structures and fixtures, using hand and power tools. It includes instruction in common systems of framing, construction materials, estimating, and blueprint reading.

July 30, 1996

COURSE OUTLINE

CARPENTRY I

Unit No.	Unit Name	Number of Days
Unit 1	Introduction and Orientation	8
Unit 2	Safety	12
Unit 3	Carpentry Math and Measurement	15
Unit 4	Tools and Equipment	38
Unit 5	Reading Blueprints and Working Drawings	19
Unit 6	Materials Used in Carpentry	19
Unit 7	Foundations	24

CARPENTRY II

Unit No.	Unit Name	Number of Days
Unit 1	Safety (Review and Reinforcement)	4
Unit 2	Floor Framing	15
Unit 3	Wall Framing	20
Unit 4	Roof Framing and Covering	22
Unit 5	Exterior Finishing	26
Unit 6	Interior Finishing and Cabinets	48

SECTION I:

CURRICULUM FRAMEWORK

FOR

RESIDENTIAL CARPENTRY

CURRICULUM FRAMEWORK

Course Name: Carpentry I

Course CIP Code: 46.0201

Course Description: Carpentry I is an instructional program that prepares individuals to lay out, fabricate, erect, install, and repair structures and fixtures, using hand and power tools. It includes units of instruction in Introduction and Orientation, Safety, Carpentry Math and Measurement, Tools and Equipment, Reading Blueprints and Working Drawings, Materials Used in Carpentry, and Foundations. (2-2½ Carnegie Units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Explain career opportunities associated with carpentry.
   a. Describe career opportunities associated with carpentry including earnings, employment opportunities, and working conditions.
   b. Describe educational and training requirements for employment and advancement in carpentry trades.
   c. Describe the benefits of trade associations and union membership in carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Explain the opportunities in Vocational Industrial Clubs of America (VICA) for students in carpentry trades.
   a. Describe relationship of VICA to the instructional program by participation in student youth organization activities in leadership, membership levels, and contests and awards.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5,C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Explain personal and general safety rules for working in carpentry trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Describe state eye safety law, including appropriate times for wearing safety glasses.
   f. Describe the purpose of a ground fault circuit interrupter (GFCI).
   g. Describe general rules for clothing and personal protective equipment safety in carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

4. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
5. Perform mathematics associated with carpentry trades.
   a. Add, subtract, divide, and multiply whole numbers.
   b. Add, subtract, divide, and multiply fractions.
   c. Add, subtract, divide, and multiply decimals.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, M1, M2, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP4, WP6
6. Identify measuring tools and devices used in carpentry trades.
   a. Recognize types of measuring devices, such as rules, tapes, calipers, and squares.
   b. Read measurements on rules and squares.
   c. Measure a specific object to the nearest 1/16" using a rule.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, M1, M2, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6
7. Explain applicable safety procedures used with tools in carpentry trades.
   a. Demonstrate the applicable safety procedures used with hand tools, power tools, and equipment.
   b. Demonstrate the correct methods of using and caring for hand tools, power tools, and equipment.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
8. Perform an assignment using hand tools, power tools, equipment, and materials used in carpentry trades.
   a. Select the correct type of hand tools, power tools, and equipment for a specific job.
   b. Measure, square, and cut a given piece of stock to specifications.
   c. Demonstrate the use of computer equipment and software for reading blueprints and estimation in Residential Carpentry.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

9. Identify terms and definitions used in blueprints and working drawings in carpentry trades.
   a. Define terms and definitions used in reading blueprints and working drawings.
   b. Identify symbols and lines used in blueprints and working drawings.
   c. Describe the purposes of a building plan or blueprint.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
10. Utilize blueprints or working drawings.
   a. Identify three basic views of a working drawing.
   b. Identify various lines used on working drawings and blueprints.
   c. Sketch the three basic views of a given object, including front, top, and right side.
   d. Identify the various plans and details of a blueprint.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
11. Identify terms and definitions related to the carpentry trades.
   a. Define terms associated with carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP4, WP6
12. Select materials used in carpentry.
   a. Determine materials for a certain job from a plan.
   b. Determine actual size of standard lumber.
   c. Identify building panels according to types and sizes.
   d. Determine correct storage for plywood, shingles, lumber, and drywall panels.
   e. Identify hardware used for a specific job in carpentry.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
13. Identify terms and definitions used in concrete footings, foundations, and forms.
   a. Describe terms used in concrete footings, foundations, and forms.
   b. Identify different types of foundations used in carpentry.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP6
14. Plan and construct a footing and/or foundation.
   a. Set up batter boards to grade.
   b. Calculate the amount of materials needed for a given form, including concrete, lumber, moisture barrier, and reinforcement materials.
   c. Perform foundation construction methods.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

CURRICULUM FRAMEWORK

Course Name: Carpentry II

Course CIP Code: 46.0290

Course Description: Carpentry II is an instructional program that prepares individuals to lay out, fabricate, erect, install, and repair structures and fixtures, using hand and power tools. Carpentry II is a continuation of Carpentry I which includes units of instruction in Safety Review and Reinforcement, Floor Framing, Wall Framing, Roof Framing and Covering, Exterior Finishing, and Interior Finishing and Cabinets. (2-2½ Carnegie Units, depending upon time spent in the course)

Competencies and Suggested Objectives:

1. Explain personal and general safety rules for working in carpentry trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Describe state eye safety law, including appropriate times for wearing safety glasses.
   f. Describe the purpose of a ground fault circuit interrupter (GFCI).
   g. Describe general rules for clothing and personal protective equipment safety in carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
3. Identify components associated with floor and sill framing.
   a. Describe floor and sill framing and support members.
   b. Describe methods used to fasten sills to the foundation.

   Related Academic Topics (See Appendix A): C1, C2, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP4

4. Apply floor framing skills.
   a. Build a box sill according to plan.
   b. Perform a layout for joists on 16" or 24" centers.
   c. Install floor joists according to plan.
   d. Select and install bridging.
   Related Academic Topics (See Appendix A): C1, C2, C3, C5, S8
   Workplace Skills (See Appendix B): WP1, WP4, WP5, WP6
5. Identify wall framing components.
   a. Define terms associated with wall and ceiling framing.
   b. Describe framing members used in wall and partition framing.
   c. Compute rough opening dimensions for windows and doors.
   d. Describe methods used to brace walls.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3
6. Apply procedures for wall framing.
   a. Select nails used in framing.
   b. Lay out wall and partition locations on floor according to plan.
   c. Build corners, T's, and headers according to plan.
   d. Lay out ceiling joists according to plan.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
7. Identify components associated with roof framing.
   a. Define terms associated with roof framing.
   b. Describe roof styles.
   c. Describe roof framing members.
   d. Describe types of roofing materials and advantages/disadvantages of each.
   Related Academic Topics (See Appendix A): C1, C2, C4, C6
   Workplace Skills (See Appendix B): WP2, WP4, WP5
8. Apply roof framing procedures.
   a. Use a framing square to compute the length of a common rafter to specifications.
   b. Lay out and cut a common rafter to specifications.
   c. Lay out rafter locations on top plate and ridgeboards on two foot centers.
   d. Select and install trusses.
   e. Install roof sheathing to specifications.
   f. Frame a gable end with vent opening according to plan.
   g. Install roofing felt and shingles with 5" exposure.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

9. Identify components of exterior finishing.
   a. Define terms associated with cornices and gable ends.
   b. Describe safety rules pertaining to exterior finishing.
   c. Identify parts of a box cornice.
   d. Describe exterior wall finishes and trims.
   e. Describe types of wall siding.
   f. Describe types of exterior doors and windows.
   Related Academic Topics (See Appendix A): C1, C2, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4
10. Perform installation of exterior finishing.
   a. Build a horizontal box cornice to specifications.
   b. Estimate amounts of siding for given jobs to specifications.
   c. Install wall siding and exterior trim.
   d. Install an exterior door and window unit.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
11. Identify interior finishing components.
   a. Identify materials used to finish walls and ceilings.
   b. Identify types of insulation used in residential construction.
   c. Identify types of drywall.
   d. Identify hardware and fasteners used with drywall.
   e. Define terms associated with interior doors and trim.
   f. Describe the types of interior door construction.
   g. Identify hands or swings of a door.
   h. Identify types of interior trim.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP6
12. Determine materials needed to perform interior finishing.
   a. Estimate materials needed to drywall a structure of a given area.
   b. Estimate material needed to trim a room to specifications.
   Related Academic Topics (See Appendix A): C1, C2, C3, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
13. Apply installation procedures for interior finishing.
   a. Install drywall.
   b. Install interior trim materials.
   c. Install interior door unit and hardware according to specifications.
   Related Academic Topics (See Appendix A): C1, C3, C5, C6, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP4, WP5, WP6
14. Identify components, build, and install cabinets.
   a. Define terms associated with cabinet installation and special built-ins.
   b. Identify the height and depth standard sizes of base and wall cabinets.
   c. Identify types of cabinet door installation.
   d. Identify styles of cabinet doors.

e. Identify types of joints used in cabinet construction.
f. Identify hardware used on cabinets.
g. Identify types of materials used on counter tops.
h. Build a cabinet with drawer according to specifications.
i. Install a cabinet/counter top.

Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S8

Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

SECTION II:

CURRICULUM GUIDE

FOR

RESIDENTIAL CARPENTRY

CARPENTRY I

CARPENTRY I
UNIT 1: INTRODUCTION AND ORIENTATION **(8 days)**

Competencies and Suggested Objectives:

1. Explain career opportunities associated with carpentry.
   a. Describe career opportunities associated with carpentry including earnings, employment opportunities, and working conditions.
   b. Describe educational and training requirements for employment and advancement in carpentry trades.
   c. Describe the benefits of trade associations and union membership in carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Explain the opportunities in Vocational Industrial Clubs of America (VICA) for students in carpentry trades.
   a. Describe relationship of VICA to the instructional program by participation in student youth organization activities in leadership, membership levels, and contests and awards.

   Related Academic Topics (See Appendix A): C1, C2, C3, C5,C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Explain career opportunities associated with carpentry.*
   a. Discussion and media to describe career opportunities associated with carpentry including earnings, employment opportunities, and working conditions.
   b. Discussion and media to describe educational and training requirements for employment and advancement in carpentry trades.
   c. Discussion and media to describe the benefits of trade associations and union membership in carpentry trades.
2. *Explain the opportunities in Vocational Industrial Clubs of America (VICA) for students in carpentry trades.*
   a. Discussion and media to describe relationship of VICA to the instructional program by participation in student youth organization activities in leadership, membership levels, and contests and awards.

Suggested Assessment Strategies:

1. *Explain career opportunities associated with carpentry.*
   a. Test - Describe career opportunities associated with carpentry including earnings, employment opportunities, and working conditions.

b. Oral/written Report - Describe educational and training requirements for employment and advancement in carpentry trades.

c. Oral/written Report - Describe the benefits of trade associations and union membership in carpentry trades.

2. Explain the opportunities in Vocational Industrial Clubs of America (VICA) for students in carpentry trades.

a. Test - Describe relationship of VICA to the instructional program by participation in student youth organization activities in leadership, membership levels, and contests and awards.

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Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Wilcox. 1992.

CARPENTRY I
UNIT 2: SAFETY **(12 days)**

Competencies and Suggested Objectives:

1. Explain personal and general safety rules for working in carpentry trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Describe state eye safety law, including appropriate times for wearing safety glasses.
   f. Describe the purpose of a ground fault circuit interrupter (GFCI).
   g. Describe general rules for clothing and personal protective equipment safety in carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. Explain personal and general safety rules for working in carpentry trades.
   a. Discussion and media on personal safety rules for working in a shop/lab and industry.
   b. Assist students to apply general workplace safety rules.
   c. Assist students to apply procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Discuss state eye safety law, including appropriate times for wearing safety glasses.
   f. Discussion and media to describe the purpose of a ground fault circuit interrupter (GFCI).
   g. Discussion and media to describe general rules for clothing and personal protective equipment safety in carpentry trades.

2. *Apply workplace environmental safety procedures.*
   a. *Present demonstration on the safe use of fire extinguishers for different classes of fires.*
   b. *Written and/or oral report to identify standard industry Safety Color Code.*
   c. *Discussion and media on factors to consider in storing and/or disposing of hazardous materials.*
   d. *Assignment to identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
   e. *Review a Materials Safety Data Sheet (MSDS).*

Suggested Assessment Strategies:

1. *Explain personal and general safety rules for working in building trades.*
   a. *Test - Demonstrate personal safety rules for working in a shop/lab and industry.*
   b. *Practical Exercise - Demonstrate general workplace safety rules.*
   c. *Practical Exercise - Demonstrate procedures for safely handling heavy objects.*
   d. *Practical Exercise - Demonstrate safety practices for using climbing devices.*
   e. *Test - Describe state eye safety law, including appropriate times for wearing safety glasses.*
   f. *Test - Describe the purpose of a ground fault circuit interrupter (GFCI).*
   g. *Test - Describe general rules for clothing and personal protective equipment safety in carpentry trades.*
2. *Apply workplace environmental safety procedures.*
   a. *Assignment - Describe the safe use of fire extinguishers for different classes of fires.*
   b. *Assignment - Identify standard industry Safety Color Code.*
   c. *Assignment - Describe factors to consider in storing and/or disposing of hazardous materials.*
   d. *Practical Exercise - Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
   e. *Practical Exercise - Review a Materials Safety Data Sheet (MSDS).*

Suggested References:

AAVIM. Developing Shop Safety Skills. Athens, GA: Author. 1981.

Eck, F. Orientation to Building Maintenance: Module I. Columbia, MO: Instructional Materials Laboratory, University of Missouri-Columbia. 1989.

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

Warzecha, Mary. Hazardous Materials: Fingertip Retrieval System. Alexandria, VA: American Vocational Association. 1991.

CARPENTRY I
UNIT 3: CARPENTRY MATH AND MEASUREMENT **(15 days)**

Competencies and Suggested Objectives:

1. Perform mathematics associated with carpentry trades.
   a. Add, subtract, divide, and multiply whole numbers.
   b. Add, subtract, divide, and multiply fractions.
   c. Add, subtract, divide, and multiply decimals.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, M1, M2, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP4, WP6
2. Identify measuring tools and devices used in carpentry trades.
   a. Recognize types of measuring devices, such as rules, tapes, calipers, and squares.
   b. Read measurements on rules and squares.
   c. Measure a specific object to the nearest 1/16" using a rule.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, M1, M2, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Suggested Teaching Strategies:

1. *Perform mathematics associated with carpentry trades.*
   a. *Present demonstration of procedures to add, subtract, divide, and multiply whole numbers.*
   b. *Present demonstration of procedures to add, subtract, divide, and multiply fractions.*
   c. *Present demonstration of procedures to add, subtract, divide, and multiply decimals.*
2. *Identify measuring tools and devices used in carpentry trades.*
   a. *Discussion and media to recognize types of measuring devices, such as rules, tapes, calipers, and squares.*
   b. *Present demonstration of procedures to read measurements on rules and squares.*
   c. *Present demonstration of procedures to measure a specific object to the nearest 1/16" using a rule.*

Suggested Assessment Strategies:

1. *Perform mathematics associated with carpentry trades.*
   a. *Practical Activity - Add, subtract, divide, and multiply whole numbers.*
   b. *Practical Activity - Add, subtract, divide, and multiply fractions.*

c. Practical Activity - Add, subtract, divide, and multiply decimals.

2. *Identify measuring tools and devices used in carpentry trades.*
   a. Practical Activity - Recognize types of measuring devices, such as rules, tapes, calipers, and squares.
   b. Practical Activity - Read measurements on rules and squares.
   c. Practical Activity - Measure a specific object to the nearest 1/16" using a rule.

Suggested References:

Eck, F. Orientation to Building Maintenance: Module I. Columbia, MO: Instructional Materials Laboratory, University of Missouri-Columbia. 1989.

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY I
UNIT 4: TOOLS AND EQUIPMENT **(38 days)**

Competencies and Suggested Objectives:

1. Explain applicable safety procedures used with tools in carpentry trades.
   a. Demonstrate the applicable safety procedures used with hand tools, power tools, and equipment.
   b. Demonstrate the correct methods of using and caring for hand tools, power tools, and equipment.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S5, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Perform an assignment using hand tools, power tools, equipment, and materials used in carpentry trades.
   a. Select the correct type of hand tools, power tools, and equipment for a specific job.
   b. Measure, square, and cut a given piece of stock to specifications.
   c. Demonstrate the use of computer equipment and software for reading blueprints and estimation in Residential Carpentry.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S5, S8

   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. *Explain applicable safety procedures used with tools in carpentry trades.*
   a. Present a demonstration of the applicable safety procedures used with hand tools, power tools, and equipment.
   b. Present a demonstration of the correct methods of using and caring for hand tools, power tools, and equipment.
2. *Perform an assignment using hand tools, power tools, equipment, and materials used in carpentry trades.*
   a. Present a demonstration of procedures to select the correct type of hand tools, power tools, and equipment for a specific job.
   b. Present a demonstration of procedures to measure, square, and cut a given piece of stock to specifications.
   c. Performance exercise to demonstrate the use of computer equipment and software for blueprint reading and estimation in Residential Carpentry.

Suggested Assessment Strategies:

1. *Explain applicable safety procedures used with tools in carpentry trades.*
   a. *Practical Activity - Demonstrate the applicable safety procedures used with hand tools, power tools, and equipment.*
   b. *Practical Activity - Demonstrate the correct methods of using and caring for hand tools, power tools, and equipment.*
2. *Perform an assignment using hand tools, power tools, equipment, and materials used in carpentry trades.*
   a. *Practical Activity - Select the correct type of hand tools, power tools, and equipment for a specific job.*
   b. *Practical Activity - Measure, square, and cut a given piece of stock to specifications.*
   c. *Performance Activity – Demonstrate the use of computer equipment and software for blueprint reading and estimation in Residential Carpentry.*

Suggested References:

Eck, F. Orientation to Building Maintenance: Module I. Columbia, MO: Instructional Materials Laboratory, University of Missouri-Columbia. 1989.

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY I
UNIT 5: READING BLUEPRINTS AND WORKING DRAWINGS (19 days)

Competencies and Suggested Objectives:

1. Identify terms and definitions used in blueprints and working drawings in carpentry trades.
   a. Define terms and definitions used in reading blueprints and working drawings.
   b. Identify symbols and lines used in blueprints and working drawings.
   c. Describe the purposes of a building plan or blueprint.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Utilize blueprints or working drawings.
   a. Identify three basic views of a working drawing.
   b. Identify various lines used on working drawings and blueprints.
   c. Sketch the three basic views of a given object, including front, top, and right side.
   d. Identify the various plans and details of a blueprint.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP2, WP4, WP6

Suggested Teaching Strategies:

1. *Identify terms and definitions used in blueprints and working drawings in carpentry trades.*
   a. Discussion and media to define terms and definitions used in reading blueprints and working drawings.
   b. Assist students to identify symbols and lines used in blueprints and working drawings.
   c. Describe the purposes of a building plan or blueprint.
2. *Utilize blueprints or working drawings.*
   a. Assist students to identify three basic views of a working drawing.
   b. Demonstrate procedures to identify various lines used on working drawings and blueprints.
   c. Demonstrate procedures to sketch the three basic views of a given object, including front, top, and right side.
   d. Demonstrate procedures to identify the various plans and details of a blueprint.

Suggested Assessment Strategies:

1. *Identify terms and definitions used in blueprints and working drawings in carpentry trades.*
   a. *Test - Define terms and definitions used in reading blueprints and working drawings.*
   b. *Practical Activity - Identify symbols and lines used in blueprints and working drawings.*
   c. *Oral/written Report - Describe the purposes of a building plan or blueprint.*
2. *Utilize blueprints or working drawings.*
   a. *Practical Activity - Identify three basic views of a working drawing.*
   b. *Practical Activity - Identify various lines used on working drawings and blueprints.*
   c. *Practical Activity - Sketch the three basic views of a given object, including front, top, and right side.*
   d. *Practical Activity - Identify the various plans and details of a blueprint.*

Suggested References:

Brown, W. C. Blueprint Reading for Construction. South Holland, IL: Goodheart-Willcox. 1990.

Eck, F. Orientation to Building Maintenance: Module I. Columbia, MO: Instructional Materials Laboratory, University of Missouri-Columbia. 1989.

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY I
UNIT 6: MATERIALS USED IN CARPENTRY (19 days)

Competencies and Suggested Objectives:

1. Identify terms and definitions related to the carpentry trades.
   a. Define terms associated with carpentry trades.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP2, WP4, WP6
2. Select materials used in carpentry.
   a. Determine materials for a certain job from a plan.
   b. Determine actual size of standard lumber.
   c. Identify building panels according to types and sizes.
   d. Determine correct storage for plywood, shingles, lumber, and drywall panels.
   e. Identify hardware used for a specific job in carpentry.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify terms and definitions related to the carpentry trades.*
   a. Discussion and media to define terms associated with carpentry trades.
2. *Select materials used in carpentry.*
   a. Present demonstration of procedures to determine materials for a certain job from a plan.
   b. Determine actual size of standard lumber.
   c. Present demonstration of procedures to identify building panels according to types and sizes.
   d. Present demonstration of procedures to determine correct storage for plywood, shingles, lumber, and drywall panels.
   e. Present demonstration of procedures to identify hardware used for a specific job in carpentry.

Suggested Assessment Strategies:

1. *Identify terms and definitions related to the carpentry trades.*
   a. Test - Define terms associated with carpentry trades.
2. *Select materials used in carpentry.*
   a. Practical Activity - Determine materials for a certain job from a plan.
   b. Practical Activity - Determine actual size of standard lumber.
   c. Practical Activity - Identify building panels according to types and sizes.

d. *Practical Activity - Determine correct storage for plywood, shingles, lumber, and drywall panels.*
e. *Practical Activity - Identify hardware used for a specific job in carpentry.*

Suggested References:

Eck, F. Orientation to Building Maintenance: Module I. Columbia, MO: Instructional Materials Laboratory, University of Missouri-Columbia. 1989.

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY I
UNIT 7: FOUNDATIONS **(24 days)**

Competencies and Suggested Objectives:

1. Identify terms and definitions used in concrete footings, foundations, and forms.
   a. Describe terms used in concrete footings, foundations, and forms.
   b. Identify different types of foundations used in carpentry.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP6
2. Plan and construct a footing and/or foundation.
   a. Set up batter boards to grade.
   b. Calculate the amount of materials needed for a given form, including concrete, lumber, moisture barrier, and reinforcement materials.
   c. Perform foundation construction methods.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP4, WP6

Suggested Teaching Strategies:

1. *Identify terms and definitions used in concrete footings, foundations, and forms.*
   a. *Discussion and media to describe terms used in concrete footings, foundations, and forms.*
   b. *Point out ways to identify different types of foundations used in carpentry.*
2. *Plan and construct a footing and/or foundation.*
   a. *Demonstrate procedures to set up batter boards to grade.*
   b. *Demonstrate procedures to calculate the amount of materials needed for a given form, including concrete, lumber, moisture barrier, and reinforcement materials.*
   c. *Demonstrate procedures to perform foundation construction methods.*

Suggested Assessment Strategies:

1. *Identify terms and definitions used in concrete footings, foundations, and forms.*
   a. *Test - Describe terms used in concrete footings, foundations, and forms.*
   b. *Practical Activity - Identify different types of foundations used in carpentry.*
2. *Plan and construct a footing and/or foundation.*
   a. *Practical Activity - Set up batter boards to grade.*

b. *Practical Activity - Calculate the amount of materials needed for a given form, including concrete, lumber, moisture barrier, and reinforcement materials.*
c. *Practical Activity - Perform foundation construction methods.*

Suggested References:

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY II

CARPENTRY II
UNIT 1: SAFETY (REVIEW AND REINFORCEMENT) **(4 days)**

Competencies and Suggested Objectives:

1. Explain personal and general safety rules for working in carpentry trades.
   a. Demonstrate personal safety rules for working in a shop/lab and industry.
   b. Demonstrate general workplace safety rules.
   c. Demonstrate procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Describe state eye safety law, including appropriate times for wearing safety glasses.
   f. Describe the purpose of a ground fault circuit interrupter (GFCI).
   g. Describe general rules for clothing and personal protective equipment safety in carpentry trades.

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6
2. Apply workplace environmental safety procedures.
   a. Describe the safe use of fire extinguishers for different classes of fires.
   b. Identify standard industry Safety Color Code.
   c. Describe factors to consider in storing and/or disposing of hazardous materials.
   d. Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.
   e. Review a Materials Safety Data Sheet (MSDS).

   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, S5, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP6

Suggested Teaching Strategies:

1. Explain personal and general safety rules for working in carpentry trades.
   a. Discussion and media on personal safety rules for working in a shop/lab and industry.
   b. Assist students to apply general workplace safety rules.
   c. Assist students to apply procedures for safely handling heavy objects.
   d. Demonstrate safety practices for using climbing devices.
   e. Discuss state eye safety law, including appropriate times for wearing safety glasses.
   f. Describe the purpose of a ground fault circuit interrupter (GFCI).
   g. Describe general rules for clothing and personal protective equipment in carpentry trades.

2. *Apply workplace environmental safety procedures.*
   a. *Present demonstration on the safe use of fire extinguishers for different classes of fires.*
   b. *Assist students to identify standard industry Safety Color Code.*
   c. *Discussion and media on factors to consider in storing and/or disposing of hazardous materials.*
   d. *Assist students to identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
   e. *Review a Materials Safety Data Sheet (MSDS).*

Suggested Assessment Strategies:

1. *Explain personal and general safety rules for working in building trades.*
   a. *Test - Demonstrate personal safety rules for working in a shop/lab and industry.*
   b. *Practical Exercise - Demonstrate general workplace safety rules.*
   c. *Practical Exercise - Demonstrate procedures for safely handling heavy objects.*
   d. *Practical Exercise - Demonstrate safety practices for using climbing devices.*
   e. *Test - Describe state eye safety law, including appropriate times for wearing safety glasses.*
   f. *Test - Describe the purpose of a ground fault circuit interrupter (GFCI).*
   g. *Test - Describe general rules for clothing and personal protective equipment in carpentry trades.*
2. *Apply workplace environmental safety procedures.*
   a. *Assignment - Describe the safe use of fire extinguishers for different classes of fires.*
   b. *Assignment - Identify standard industry Safety Color Code.*
   c. *Assignment - Describe factors to consider in storing and/or disposing of hazardous materials.*
   d. *Practical Exercise - Identify hazardous materials that may be found on a job site and procedures for handling, avoiding, or removing them according to Occupational Safety and Health Administration (OSHA) regulations.*
   e. *Practical Exercise - Review a Materials Safety Data Sheet (MSDS).*

Suggested References:

AAVIM. Developing Shop Safety Skills. Athens, GA: Author. 1981.

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Toenjes, L. P. Building Trades Dictionary. Homewood, IL: American Technical Publishers. 1989.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

Warzecha, Mary. Hazardous Materials: Fingertip Retrieval System. Alexandria, VA: American Vocational Association. 1991.

CARPENTRY II
UNIT 2: FLOOR FRAMING **(15 days)**

Competencies and Suggested Objectives:

1. Identify components associated with floor and sill framing.
   a. Describe floor and sill framing and support members.
   b. Describe methods used to fasten sills to the foundation.
   Related Academic Topics (See Appendix A): C1, C2, C6, M7, S8
   Workplace Skills (See Appendix B): WP2, WP3, WP4
2. Apply floor framing skills.
   a. Build a box sill according to plan.
   b. Perform a layout for joists on 16" or 24" centers.
   c. Install floor joists according to plan.
   d. Select and install bridging.
   Related Academic Topics (See Appendix A): C1, C2, C3, C5, S8
   Workplace Skills (See Appendix B): WP1, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify components associated with floor and sill framing.*
   a. Discussion and media to describe floor and sill framing and support members.
   b. Discussion and media to describe methods used to fasten sills to the foundation.
2. *Apply floor framing skills.*
   a. Present demonstration of procedures to build a box sill according to plan.
   b. Present demonstration of procedures to perform a layout for joists on 16" or 24" centers.
   c. Present demonstration of procedures to install floor joists according to plan.
   d. Present demonstration of procedures to select and install bridging.

Suggested Assessment Strategies:

1. *Identify components associated with floor and sill framing.*
   a. Test - Describe floor and sill framing and support members.
   b. Test - Describe methods used to fasten sills to the foundation.
2. *Apply floor framing skills.*
   a. Practical Activity - Build a box sill according to plan.
   b. Practical Activity - Perform a layout for joists on 16" or 24" centers.
   c. Practical Activity - Install floor joists according to plan.
   d. Practical Activity - Select and install bridging.

Suggested References:

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY II
UNIT 3: WALL FRAMING **(20 days)**

Competencies and Suggested Objectives:

1. Identify wall framing components.
   a. Define terms associated with wall and ceiling framing.
   b. Describe framing members used in wall and partition framing.
   c. Compute rough opening dimensions for windows and doors.
   d. Describe methods used to brace walls.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3
2. Apply procedures for wall framing.
   a. Select nails used in framing.
   b. Lay out wall and partition locations on floor according to plan.
   c. Build corners, T's, and headers according to plan.
   d. Lay out ceiling joists according to plan.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify wall framing components.*
   a. *Discussion and media to define terms associated with wall and ceiling framing.*
   b. *Discussion and media to describe framing members used in wall and partition framing.*
   c. *Demonstrate how to compute rough opening dimensions for windows and doors.*
   d. *Discussion and media to describe methods used to brace walls.*
2. *Apply procedures for wall framing.*
   a. *Present demonstration of procedures to select nails used in framing.*
   b. *Present demonstration of procedures to lay out wall and partition locations on floor according to plan.*
   c. *Present demonstration of procedures to build corners, T's, and headers according to plan.*
   d. *Present demonstration of procedures to lay out ceiling joists according to plan.*

Suggested Assessment Strategies:

1. *Identify wall framing components.*
   a. *Test - Define terms associated with wall and ceiling framing.*
   b. *Test - Describe framing members used in wall and partition framing.*
   c. *Practical Activity - Compute rough opening dimensions for windows and doors.*
   d. *Oral/written Report - Describe methods used to brace walls.*
2. *Apply procedures for wall framing.*
   a. *Practical Activity - Select nails used in framing.*
   b. *Practical Activity - Lay out wall and partition locations on floor according to plan.*
   c. *Practical Activity - Build corners, T's, and headers according to plan.*
   d. *Practical Activity - Lay out ceiling joists according to plan.*

Suggested References:

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY II
UNIT 4: ROOF FRAMING AND COVERING **(22 days)**

Competencies and Suggested Objectives:

1. Identify components associated with roof framing.
   a. Define terms associated with roof framing.
   b. Describe roof styles.
   c. Describe roof framing members.
   d. Describe types of roofing materials and advantages/disadvantages of each.
   Related Academic Topics (See Appendix A): C1, C2, C4, C6
   Workplace Skills (See Appendix B): WP2, WP4, WP5
2. Apply roof framing procedures.
   a. Use a framing square to compute the length of a common rafter to specifications.
   b. Lay out and cut a common rafter to specifications.
   c. Lay out rafter locations on top plate and ridgeboards on two foot centers.
   d. Select and install trusses.
   e. Install roof sheathing to specifications.
   f. Frame a gable end with vent opening according to plan.
   g. Install roofing felt and shingles with 5" exposure.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify components associated with roof framing.*
   a. Discussion and media to define terms associated with roof framing.
   b. Discussion and media to describe roof styles.
   c. Discussion and media to describe roof framing members.
   d. Describe types of roofing materials and advantages/disadvantages of each.
2. *Apply roof framing procedures.*
   a. Present demonstration of procedures to use a framing square to compute the length of a common rafter to specifications.
   b. Present demonstration of procedures to lay out and cut a common rafter to specifications.
   c. Present demonstration of procedures to lay out rafter locations on top plate and ridgeboards on two foot centers.
   d. Present demonstration of procedures to select and install trusses.
   e. Present demonstration of procedures to install roof sheathing to specifications.

f. Present demonstration of procedures to frame a gable end with vent opening according to plan.
g. Present demonstration of procedures to install roofing felt and shingles with 5" exposure.

Suggested Assessment Strategies:

1. *Identify components associated with roof framing.*
   a. Test - Define terms associated with roof framing.
   b. Test - Describe roof styles.
   c. Test - Describe roof framing members.
   d. Oral/written assignment to describe types of roofing materials and advantages/disadvantages of each.
2. *Apply roof framing procedures.*
   a. Practical Activity - Use a framing square to compute the length of a common rafter to specifications.
   b. Practical Activity - Lay out and cut a common rafter to specifications.
   c. Practical Activity - Lay out rafter locations on top plate and ridgeboards on two foot centers.
   d. Practical Activity - Select and install trusses.
   e. Practical Activity - Install roof sheathing to specifications.
   f. Practical Activity - Frame a gable end with vent opening according to plan.
   g. Install roofing felt and shingles with 5" exposure.

Suggested References:

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY II
UNIT 5: EXTERIOR FINISHING **(26 days)**

Competencies and Suggested Objectives:

1. Identify components of exterior finishing.
   a. Define terms associated with cornices and gable ends.
   b. Describe safety rules pertaining to exterior finishing.
   c. Identify parts of a box cornice.
   d. Describe exterior wall finishes and trims.
   e. Describe types of wall siding.
   f. Describe types of exterior doors and windows.
   Related Academic Topics (See Appendix A): C1, C2, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4
2. Perform installation of exterior finishing.
   a. Build a horizontal box cornice to specifications.
   b. Estimate amounts of siding for given jobs to specifications.
   c. Install wall siding and exterior trim.
   d. Install an exterior door and window unit.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify components of exterior finishing.*
   a. *Discussion and media to define terms associated with cornices and gable ends.*
   b. *Discussion and media to describe safety rules pertaining to exterior finishing.*
   c. *Identify parts of a box cornice.*
   d. *Discussion and media to describe exterior wall finishes and trims.*
   e. *Discussion and media to describe types of wall siding.*
   f. *Discussion and media to describe types of exterior doors and windows.*
2. *Perform installation of exterior finishing.*
   a. *Present demonstration of procedures to build a horizontal box cornice to specifications.*
   b. *Present demonstration of procedures to estimate amounts of siding for given jobs to specifications.*
   c. *Present demonstration of procedures to install wall siding and exterior trim.*
   d. *Present demonstration of procedures to install an exterior door and window unit.*

Suggested Assessment Strategies:

1. *Identify components of exterior finishing.*
   a. *Test - Define terms associated with cornices and gable ends.*
   b. *Test - Describe safety rules pertaining to exterior finishing.*
   c. *Practical Activity - Identify parts of a box cornice.*
   d. *Test - Describe exterior wall finishes and trims.*
   e. *Test - Describe types of wall siding.*
   f. *Test - Describe types of exterior doors and windows.*
2. *Perform installation of exterior finishing.*
   a. *Practical Activity - Build a horizontal box cornice to specifications.*
   b. *Practical Activity - Estimate amounts of siding for given jobs to specifications.*
   c. *Practical Activity - Install wall siding and exterior trim.*
   d. *Practical Activity - Install an exterior door and window unit.*

Suggested References:

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

CARPENTRY II
UNIT 6: INTERIOR FINISHING AND CABINETS **(48 days)**

Competencies and Suggested Objectives:

1. Identify interior finishing components.
   a. Identify materials used to finish walls and ceilings.
   b. Identify types of insulation used in residential construction.
   c. Identify types of drywall.
   d. Identify hardware and fasteners used with drywall.
   e. Define terms associated with interior doors and trim.
   f. Describe the types of interior door construction.
   g. Identify hands or swings of a door.
   h. Identify types of interior trim.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6
   Workplace Skills (See Appendix B): WP1, WP2, WP6
2. Determine materials needed to perform interior finishing.
   a. Estimate materials needed to drywall a structure of a given area.
   b. Estimate material needed to trim a room to specifications.
   Related Academic Topics (See Appendix A): C1, C2, C3, C5, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6
3. Apply installation procedures for interior finishing.
   a. Install drywall.
   b. Install interior trim materials.
   c. Install interior door unit and hardware according to specifications.
   Related Academic Topics (See Appendix A): C1, C3, C5, C6, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP4, WP5, WP6
4. Identify components, build, and install cabinets.
   a. Define terms associated with cabinet installation and special built-ins.
   b. Identify the height and depth standard sizes of base and wall cabinets.
   c. Identify types of cabinet door installation.
   d. Identify styles of cabinet doors.
   e. Identify types of joints used in cabinet construction.
   f. Identify hardware used on cabinets.
   g. Identify types of materials used on counter tops.
   h. Build a cabinet with drawer according to specifications.
   I. Install a cabinet/counter top.
   Related Academic Topics (See Appendix A): C1, C2, C3, C4, C5, C6, M4, M5, M7, S8
   Workplace Skills (See Appendix B): WP1, WP2, WP3, WP4, WP5, WP6

Suggested Teaching Strategies:

1. *Identify interior finishing components.*
   a. *Discussion and media to identify materials used to finish walls and ceilings.*
   b. *Discussion and media to identify types of insulation used in residential construction.*
   c. *Identify types of drywall.*
   d. *Identify hardware and fasteners used with drywall.*
   e. *Discussion and media to define terms associated with interior doors and trim.*
   f. *Discussion and media to describe the types of interior door construction.*
   g. *Identify hands or swings of a door.*
   h. *Discussion and media to identify types of interior trim.*
2. *Determine materials needed to perform interior finishing.*
   a. *Demonstrate how to estimate materials needed to drywall a structure of a given area.*
   b. *Demonstrate how to estimate material needed to trim a room to specifications.*
3. *Apply installation procedures for interior finishing.*
   a. *Demonstrate procedures to install drywall.*
   b. *Demonstrate procedures to install interior trim materials.*
   c. *Demonstrate procedures to install interior door unit and hardware according to specifications.*
4. *Identify components, build, and install cabinets.*
   a. *Discussion and media to define terms associated with cabinet installation and special built-ins.*
   b. *Identify the height and depth standard sizes of base and wall cabinets.*
   c. *Identify types of cabinet door installation.*
   d. *Identify styles of cabinet doors.*
   e. *Identify types of joints used in cabinet construction.*
   f. *Identify hardware used on cabinets.*
   g. *Identify types of materials used on counter tops.*
   h. *Demonstrate procedures to build a cabinet with drawer according to specifications.*
   I. *Demonstrate procedures to install a cabinet/counter top.*

Suggested Assessment Strategies:

1. *Identify interior finishing components.*
   a. *Practical Activity - Identify materials used to finish walls and ceilings.*
   b. *Practical Activity - Identify types of insulation used in residential construction.*
   c. *Practical Activity - Identify types of drywall.*
   d. *Practical Activity - Identify hardware and fasteners used with drywall.*

   e. *Test - Define terms associated with interior doors and trim.*
   f. *Test - Describe the types of interior door construction.*
   g. *Practical Activity - Identify hands or swings of a door.*
   h. *Practical Activity - Identify types of interior trim.*
2. *Determine materials needed to perform interior finishing.*
   a. *Practical Activity - Estimate materials needed to drywall a structure of a given area.*
   b. *Practical Activity - Estimate material needed to trim a room to specifications.*
3. *Apply installation procedures for interior finishing.*
   a. *Practical Activity - Install drywall.*
   b. *Practical Activity - Install interior trim materials.*
   c. *Practical Activity - Install interior door unit and hardware according to specifications.*
4. *Identify components, build, and install cabinets.*
   a. *Test - Define terms associated with cabinet installation and special built-ins.*
   b. *Practical Activity - Identify the height and depth standard sizes of base and wall cabinets.*
   c. *Practical Activity - Identify types of cabinet door installation.*
   d. *Practical Activity - Identify styles of cabinet doors.*
   e. *Practical Activity - Identify types of joints used in cabinet construction.*
   f. *Practical Activity - Identify hardware used on cabinets.*
   g. *Practical Activity - Identify types of materials used on counter tops.*
   h. *Practical Activity - Build a cabinet with drawer according to specifications.*
   I. *Practical Activity - Install a cabinet/counter top.*

Suggested References:

Feirer, J. L., Hutchings, G. R., & Feirer, M. D. Carpentry and Building Construction. (4th ed.). New York, NY: Macmillan/McGraw-Hill. 1993.

Hendrix, L. J. Residential Carpentry. Washington, DC: Associated General Contractors of America and Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, Stillwater, OK. 1985.

Lewis, G. Carpentry. New Albany, NY: Delmar. 1995.

Wagner, W. H. Modern Carpentry. South Holland, IL: Goodheart-Willcox. 1992.

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SECTION III:

RECOMMENDED TOOLS AND EQUIPMENT

RECOMMENDED TOOLS AND EQUIPMENT
(for class size of 20)

1. Air compressor (1)
2. Awl, scratch (2)
3. Bar, ripping (2)
4. Bit, expansion (2)
5. Bit set, auger (¼" -1") (2)
6. Brace, wood hand (4)
7. C-clamp, assorted sizes (8)
8. C-clamp, vise grip (4)
9. Cabinet, flammable materials (1)
10. Chalkline (4)
11. Chisel, ripping (1)
12. Chisel set, wood (¼" - 1½") (2)
13. Clamp, bar (48") (6)
14. Clamp, bar (72") (6)
15. Computer w/operating software w/multimedia kit (1)
16. Cutter, bolt (1)
17. Dividers, wing (2)
18. Drill, cordless (14.4V) (2)
19. Drill, portable (½") (1)
20. Drill press, (14" w/vise) (1)
21. Drill set, spade (¼" - 1½") (1)
22. Drill set, twist (1/16" - ½") (1)
23. Drill, portable (½", right angle) (1)
24. Drill, portable (⅜") (2)
25. Dust collection system for shop (1)
26. Extension cord, (25' 12/3 conductor) (6)
27. Extinguisher, fire (ABC) (2)
28. Eye protection and sterilization chest (w/20 pr. safety glasses) (1)
29. File, metal double-cut (3)
30. File, wood (flat, assorted sizes) (6)
31. File, wood rasp (half-round) (6)
32. Grinder, pedestal (1)
33. Hacksaw (1)
34. Half hatchet (1)
35. Hatchet, shingle hammer (2)
36. Hammer, straight claw (6)
37. Hammer, sledge (3)
38. Hammer, curved claw (13 oz.) (2)
39. Hammer, curved claw (16 oz.) (12)
40. Handsaw, rip (1)
41. Handsaw, crosscut (8)

42. Hose, air (50') (2)
43. Knife, putty (4") (2)
44. Knife, putty (6") (2)
45. Knife, putty (2") (2)
46. Knife, utility (2)
47. Ladder, extension (16') (1)
48. Ladder, step (6') (2)
49. Ladder, step (8') (2)
50. Level, laser transit w/tripod and leveling rod (1)
51. Level, carpenter's aluminum (or wood) (48") (2)
52. Level, carpenter's aluminum (or wood) (24") (2)
53. Mallet, rubber (1)
54. Nailer, pneumatic finish (1)
55. Nailer, pneumatic framer (1)
56. Plane, block (2)
57. Plane, electric block (2)
58. Plane, jack (2)
59. Pliers, channel lock (12") (2)
60. Pliers, diagonal (2)
61. Pliers, lineman's (side cutters) (1)
62. Pliers, needlenose (2)
63. Pliers, slip joint (2)
64. Pliers, vise grip (2)
65. Plumb bob (2)
66. Router, w/bits (3)
67. Printer, dot matrix (1)
68. Rule, folding (6') (12)
69. Safety kit (OSHA approved) (1)
70. Sander, belt (3)
71. Sander, finish w/disc (1)
72. Sander, portable finishing (3)
73. Saw, back (2)
74. Saw, band (20") (1)
75. Saw, circular (7¼" portable) (4)
76. Saw, coping (2)
77. Saw, hole set (1" - 2½" w/arbor) (1)
78. Saw, keyhole (2)
79. Saw, motorized miter (2)
80. Saw, radial arm (1)
81. Saw, reciprocating (1)
82. Saw, saber (3)
83. Saw, table (2)
84. Scaffold kit (Safeway) (5') (2)
85. Screwdriver set (Phillips, assorted sizes) (10)

86. Screwdriver set (spiral w/bits) (2)
87. Screwdriver set (flat blade, assorted sizes) (10)
88. Set, nail (assorted sizes) (6)
89. Shield safety (4)
90. Shovel, round point (2)
91. Shovel, square point (2)
92. Snips, aviation (straight) (2)
93. Snips, tin (2)
94. Square, framing w/rafter chart (12)
95. Square, combination (12)
96. Square, speed (6)
97. Square, try (2)
98. T-bevel (2)
99. Table, workbench (4)
100. Tape, fiberglass/steel (100') (2)
101. Tape, steel (25') (12)
102. Vise, woodworking (5") (8)
103. Wheelbarrow (6 cu. ft.) (1)
104. Wrench set, combination (SAE) (1)
105. Wrench, adjustable (12") (1)
106. Wrench, adjustable (10") (1)
107. Wrench, adjustable (8") (1)
108. Wrench set, combination (Metric) (1)
109. Wrench set, sockets w/ratchets and pullhandles (SAE ¼", ⅜", and ½" drives)(1)
110. Wrench set, sockets w/ratchets and pullhandles (Metric ¼", ⅜", and ½" drives) (1)

RECOMMENDED INSTRUCTIONAL AIDS

1. Calculator (1)
2. Cart, AV (for overhead projector) (1)
3. Cart, AV (for TV-VCR) (1)
4. Projector, overhead (1)
5. TV-VCR (1)
6. Video out (Microcomputer to TV monitor) (1)
7. Software for blueprint reading and estimation in carpentry

APPENDIX A:

RELATED ACADEMIC TOPICS

APPENDIX A

RELATED ACADEMIC TOPICS FOR COMMUNICATIONS

C1 Interpret written material.
C2 Interpret visual materials (maps, charts, graphs, tables, etc.).
C3 Listen, comprehend, and take appropriate actions.
C4 Access, organize, and evaluate information.
C5 Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.
C6 Communicate ideas and information effectively using various oral and written forms for a variety of audiences and purposes.

EXPANDED TOPICS FOR COMMUNICATIONS

TOPIC C1: Interpret written material.

C1.01 Read and follow complex written directions.
C1.02 Recognize common words and meanings associated with a variety of occupations.
C1.03 Adjust reading strategy to purpose and type of reading.
C1.04 Use sections of books and reference sources to obtain information.
C1.05 Compare information from multiple sources and check validity.
C1.06 Interpret items and abbreviations used in multiple forms.
C1.07 Interpret short notes, memos, and letters.
C1.08 Comprehend technical words and concepts.
C1.09 Use various reading techniques depending on purpose for reading.
C1.10 Find, read, understand, and use information from printed matter or electronic sources.

TOPIC C2: Interpret visual materials (maps, charts, graphs, tables, etc.).

C2.01 Use visuals in written and in oral presentations.
C2.02 Recognize visual cues to meaning (layout, typography, etc.).
C2.03 Interpret and apply information using visual materials.

TOPIC C3: Listen, comprehend, and take appropriate action.

C3.01 Identify and evaluate orally-presented messages according to purpose.
C3.02 Recognize barriers to effective listening.
C3.03 Recognize how voice inflection changes meaning.
C3.04 Identify speaker signals requiring a response and respond accordingly.
C3.05 Listen attentively and take accurate notes.
C3.06 Use telephone to receive information.

C3.07 Analyze and distinguish information from formal and informal oral presentations.

TOPIC C4: Access, organize, and evaluate information.

C4.01 Distinguish fact from opinion.
C4.02 Use various print and non-print sources for specialized information.
C4.03 Interpret and distinguish between literal and figurative meaning.
C4.04 Interpret written or oral communication in relation to context and writer's point of view.
C4.05 Use relevant sources to gather information for written or oral communication.

TOPIC C5: Use written and/or oral language skills to work cooperatively to solve problems, make decisions, take actions, and reach agreement.

C5.01 Select appropriate words for communication needs.
C5.02 Use reading, writing, listening, and speaking skills to solve problems.
C5.03 Compose inquiries and requests.
C5.04 Write persuasive letters and memos.
C5.05 Edit written reports, letters, memos, and short notes for clarity, correct grammar, and effective sentences.
C5.06 Write logical and understandable statements, phrases, or sentences for filling out forms, for correspondence or reports.
C5.07 Write directions or summaries of processes, mechanisms, events, or concepts.
C5.08 Select and use appropriate formats for presenting reports.
C5.09 Convey information to audiences in writing.
C5.10 Compose technical reports and correspondence that meet accepted standards for written communications.

TOPIC C6: Communicate ideas and information using oral and written forms for a variety of audiences and purposes.

C6.01 Give complex oral instructions.
C6.02 Describe a business or industrial process/mechanism.
C6.03 Participate effectively in group discussions and decision making.
C6.04 Produce effective oral messages utilizing different media.
C6.05 Explore ideas orally with partners.
C6.06 Participate in conversations by volunteering information when appropriate and asking relevant questions when appropriate.
C6.07 Restate or paraphrase a conversation to confirm one's own understanding.
C6.08 Gather and provide information utilizing different media.

C6.09 Prepare and deliver persuasive, descriptive, and demonstrative oral presentations.

RELATED ACADEMIC TOPICS FOR MATHEMATICS

M1 Relate number relationships, number systems, and number theory.
M2 Explore patterns and functions.
M3 Explore algebraic concepts and processes.
M4 Explore the concepts of measurement.
M5 Explore the geometry of one-, two-, and three-dimensions.
M6 Explore concepts of statistics and probability in real world situations.
M7 Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

EXPANDED TOPICS FOR MATHEMATICS

TOPIC M1: Relate number relationships, number systems, and number theory.

M1.01 Understand, represent, and use numbers in a variety of equivalent forms (integer, fraction, decimal, percent, exponential, and scientific notation) in real world and mathematical problem situations.
M1.02 Develop number sense for whole numbers, fractions, decimals, integers, and rational numbers.
M1.03 Understand and apply ratios, proportions, and percents in a wide variety of situations.
M1.04 Investigate relationships among fractions, decimals, and percents.
M1.05 Compute with whole numbers, fractions, decimals, integers, and rational numbers.
M1.06 Develop, analyze, and explain procedures for computation and techniques for estimations.
M1.07 Select and use an appropriate method for computing from among mental arithmetic, paper-and-pencil, calculator, and computer methods.
M1.08 Use computation, estimation, and proportions to solve problems.
M1.09 Use estimation to check the reasonableness of results.

TOPIC M2: Explore patterns and functions.

M2.01 Describe, extend, analyze, and create a wide variety of patterns.
M2.02 Describe and represent relationships with tables, graphs, and rules.
M2.03 Analyze functional relationships to explain how a change in one quantity results in a change in another.
M2.04 Use patterns and functions to represent and solve problems.
M2.05 Explore problems and describe results using graphical, numerical, physical, algebraic, and verbal mathematical models or representations.

M2.06 Use a mathematical idea to further their understanding of other mathematical ideas.
M2.07 Apply mathematical thinking and modeling to solve problems that arise in other disciplines, such as art, music, and business.

TOPIC M3: Explore algebraic concepts and processes.

M3.01 Represent situations and explore the interrelationships of number patterns with tables, graphs, verbal rules, and equations.
M3.02 Analyze tables and graphs to identify properties and relationships and to interpret expressions and equations.
M3.03 Apply algebraic methods to solve a variety of real world and mathematical problems.

TOPIC M4: Explore the concepts of measurement.

M4.01 Estimate, make, and use measurements to describe and compare phenomena.
M4.02 Select appropriate units and tools to measure to the degree of accuracy required in a particular situation.
M4.03 Extend understanding of the concepts of perimeter, area, volume, angle measure, capacity, and weight and mass.
M4.04 Understand and apply reasoning processes, with special attention to spatial reasoning and reasoning with proportions and graphs.

TOPIC M5: Explore the geometry of one-, two-, and three-dimensions.

M5.01 Identify, describe, compare, and classify geometric figures.
M5.02 Visualize and represent geometric figures with special attention to developing spatial sense.
M5.03 Explore transformations of geometric figures.
M5.04 Understand and apply geometric properties and relationships.
M5.05 Classify figures in terms of congruence and similarity and apply these relationships.

TOPIC M6: Explore the concepts of statistics and probability in real world situations.

M6.01 Systematically collect, organize, and describe data.
M6.02 Construct, read, and interpret tables, charts, and graphs.
M6.03 Develop an appreciation for statistical methods as powerful means for decision making.
M6.04 Make predictions that are based on exponential or theoretical probabilities.

M6.05 Develop an appreciation for the pervasive use of probability in the real world.

TOPIC M7: Apply mathematical methods, concepts, and properties to solve a variety of real-world problems.

M7.01 Use computers and/or calculators to process information for all mathematical situations.
M7.02 Use problem-solving approaches to investigate and understand mathematical content.
M7.03 Formulate problems from situations within and outside mathematics.
M7.04 Generalize solutions and strategies to new problem situations.

RELATED ACADEMIC TOPICS FOR SCIENCE

S1 Explain the Anatomy and Physiology of the human body.
S2 Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.
S3 Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.
S4 Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.
S5 Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.
S6 Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.
S7 Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance, population genetics, the structure and function of DNA, and current applications of DNA technology.
S8 Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

EXPANDED TOPICS FOR SCIENCE

TOPIC S1: Explain the Anatomy and Physiology of the human body.

S1.01 Recognize common terminology and meanings.
S1.02 Explore the relationship of the cell to more complex systems within the body.

S1.03 Summarize the functional anatomy of all the major body systems.
S1.04 Relate the physiology of the major body systems to its corresponding anatomy.
S1.05 Compare and contrast disease transmission and treatment within each organ system.
S1.06 Explore the usage of medical technology as related to human organs and organ systems.
S1.07 Explain the chemical composition of body tissue.

TOPIC S2: Apply the basic biological principles of Plants, Viruses and Monerans, Algae, Protista, and Fungi.

S2.01 Identify the major types and structures of plants, viruses, monera, algae protista, and fungi.
S2.02 Explain sexual and asexual reproduction.
S2.03 Describe the ecological importance of plants as related to the environment.
S2.04 Analyze the physical chemical and behavioral process of a plant.

TOPIC S3: Relate the nine major phyla of the kingdom animalia according to morphology, anatomy, and physiology.

S3.01 Explain the morphology, anatomy, and physiology of animals.
S3.02 Describe the characteristics, behaviors, and habitats of selected animals.

TOPIC S4: Explore the chemical and physical properties of the earth to include Geology, Meteorology, Oceanography, and the Hydrologic Cycle.

S 01 Examine minerals and their identification, products of the rock cycle, byproducts of weathering, and the effects of erosion.
S4.02 Relate the Hydrologic Cycle to include groundwater its zones, movement, and composition; surface water systems, deposits, and runoff.
S4.03 Consider the effects of weather and climate on the environment.
S4.04 Examine the composition of seawater; wave, tides, and currents; organisms, environment, and production of food; energy, food and mineral resources of the oceans.

TOPIC S5: Investigate the properties and reactions of matter to include symbols, formulas and nomenclature, chemical equations, gas laws, chemical bonding, acid-base reactions, equilibrium, oxidation-reduction, nuclear chemistry, and organic chemistry.

S5.01 Examine the science of chemistry to include the nature of matter, symbols, formulas and nomenclature, and chemical equations.

S5.02 Identify chemical reactions including precipitation, acids-bases, and reduction-oxidation.
S5.03 Explore the fundamentals of chemical bonding and principles of equilibrium.
S5.04 Relate the behavior of gases.
S5.05 Investigate the structure, reactions, and uses of organic compounds; and investigate nuclear chemistry and radiochemistry.

TOPIC S6: Explore the principles and theories related to motion, mechanics, electricity, magnetism, light energy, thermal energy, wave energy, and nuclear physics.

S6.01 Examine fundamentals of motion of physical bodies and physical dynamics.
S6.02 Explore the concepts and relationships among work, power, and energy.
S6.03 Explore principles, characteristics, and properties of electricity, magnetism, light energy, thermal energy, and wave energy.
S6.04 Identify principles of modern physics related to nuclear physics.

TOPIC S7: Explore the principles of genetic and molecular Biology to include the relationship between traits and patterns of inheritance; population genetics, the structure and function of DNA, and current applications of DNA technology.

S7.01 Examine principles, techniques, and patterns of traits and inheritance in organisms.
S7.02 Apply the concept of population genetics to both microbial and multicellular organism.
S7.03 Identify the structure and function of DNA and the uses of DNA technology in science, industry, and society.

TOPIC S8: Apply concepts related to the scientific process and method to include safety procedures for classroom and laboratory; use and care of scientific equipment; interrelationships between science, technology and society; and effective communication of scientific results in oral, written, and graphic form.

S8.01 Apply the components of scientific processes and methods in classroom and laboratory investigations.
S8.02 Observe and practice safe procedures in the classroom and laboratory.
S8.03 Demonstrate proper use and care for scientific equipment.
S8.04 Investigate science careers, and advances in technology.
S8.05 Communicate results of scientific investigations in oral, written, and graphic form.

APPENDIX B:

WORKPLACE SKILLS

APPENDIX B
WORKPLACE SKILLS FOR THE 21ST CENTURY

WP1 Allocates resources (time, money, materials and facilities, and human resources).

WP2 Acquires, evaluates, organizes and maintains, and interprets/communicates information, including the use of computers.

WP3 Practices interpersonal skills related to careers including team member participation, teaching other people, serving clients/customers, exercising leadership, negotiation, and working with culturally diverse.

WP4 Applies systems concept including basic understanding, monitoring and correction system performance, and designing and improving systems.

WP5 Selects, applies, and maintains/troubleshoots technology.

WP6 Employs thinking skills including creative thinking, decision making, problem solving, reasoning, and knowing how to learn.

APPENDIX C:

STUDENT COMPETENCY PROFILE

STUDENT COMPETENCY PROFILE FOR CARPENTRY I

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Introduction and Orientation

_____ 1. Explain career opportunities associated with carpentry.
_____ 2. Explain the opportunities in Vocational Industrial Clubs of America (VICA) for students in carpentry trades.

Unit 2: Safety

_____ 1. Explain personal and general safety rules for working in carpentry trades.
_____ 2. Apply workplace environmental safety procedures.

Unit 3: Carpentry Math and Measurement

_____ 1. Perform mathematics associated with carpentry trades.
_____ 2. Identify measuring tools and devices used in carpentry trades.

Unit 4: Tools and Equipment

_____ 1. Explain applicable safety procedures used with tools in carpentry trades.
_____ 2. Perform an assignment using hand tools, power tools, equipment, and materials used in carpentry trades.

Unit 5: Reading Blueprints and Working Drawings

_____ 1. Identify terms and definitions used in blueprints and working drawings in carpentry trades.
_____ 2. Utilize blueprints or working drawings.

Unit 6: Materials used in Carpentry

_____ 1. Identify terms and definitions related to the carpentry trades.
_____ 2. Select materials used in carpentry.

Unit 7: Foundations

_____ 1. Identify terms and definitions used in concrete footings, foundations, and forms.
_____ 2. Plan and construct a footing and/or foundation.

STUDENT COMPETENCY PROFILE
FOR CARPENTRY II

Student: _____

This record is intended to serve as a method of noting student achievement of the competencies in each course. It can be duplicated for each student and serve as a cumulative record of competencies achieved in the program.

In the blank before each competency, place the date on which the student mastered the competency.

Unit 1: Safety (Review and Reinforcement)

_____ 1. Explain personal and general safety rules for working in carpentry trades.
_____ 2. Apply workplace environmental safety procedures.

Unit 2: Floor Framing

_____ 1. Identify components associated with floor and sill framing.
_____ 2. Apply floor framing skills.

Unit 3: Wall Framing

_____ 1. Identify wall framing components.
_____ 2. Apply procedures for wall framing.

Unit 4: Roof Framing and Covering

_____ 1. Identify components associated with roof framing.
_____ 2. Apply roof framing procedures.

Unit 5: Exterior Finishing

_____ 1. Identify components of exterior finishing.
_____ 2. Perform installation of exterior finishing.

Unit 6: Interior Finishing and Cabinets

_____ 1. Identify interior finishing components.
_____ 2. Determine materials needed to perform interior finishing.
_____ 3. Apply installation procedures for interior finishing.
_____ 4. Identify components, build, and install cabinets.